Proceedings of the 3rd Annual British Columbia Mine Reclamation Symposium in Vernon, BC, 1979.
The Technical and Research Committee on Reclamation

RECLAMATION OF EXPLORATION DISTURBANCES AT THE ISOLATION RIDGE PROPERTY FORDING COAL LIMITED

Paper presented

by:

A. Magnusson

and

D. Gaspe

Fording Coal Limited

RECLAMATION OF EXPLORATION DISTURBANCES AT THE ISOLATION RIDGE PROPERTY FORDING COAL LIMITED

INTRODUCTION

During the summer of 1978, Fording Coal Limited completed an important reclamation project at Isolation Ridge in the Headwaters of the Oldman River. The property is located in the Rocky Mountains some 40 road miles north of Coleman, Alberta or 16 miles as the crow flies, east of Elkford, B.C.

Fording's predecessor, CanPac Minerals Limited, acquired coal leases to the area in 1969 and spent the next three years exploring for metallurgical coal. In 1973 the property was optioned to the Granby Mining Corporation Limited, of Vancouver, B.C., who performed more exploration work the following year. All work was suspended in 1975 because the Alberta Government was formulating its Eastern Slopes Policy and Granby could not obtain exploration permits. The Policy was issued in 1976 and it classified the Isolation Ridge area as part of Category Two. This category prohibits surface mining and the Granby Corporation did not exercise its option to purchase the property. Isolation Ridge reverted back to Fording Coal in 1978.

PROJECT OBJECTIVE

This reclamation program was undertaken by Fording Coal Limited, as successor to CanPac Minerals Limited, to reclaim disturbed areas which would not be required for exploration purposes in the foreseeable future.

All of the work was to be performed to the satisfaction of the Alberta Forest Service. Regulations required that disturbed areas be brought back to approximate original contour and reseeded to prevent erosion and to establish growth.

Early in 1978, areas requiring restoration and those to be left open for future access were identified by the Land Use Office, Alberta Forest Service in co-operation with Fording Coal Limited personnel.

PROJECT SIZE

Up to the end of 1974, some 56 miles of trails, 82 drill sites, 91 trenches and six adit sites had been constructed. During the fall of 1974, all the adit sites were reclaimed along with some of the larger drill sites.

The 1978 reclamation project was concerned with 43.5 miles of trails and approximately 50 drill sites associated with these roads.

To best utilize the short work period available to the project, it was decided to establish a temporary camp near the work site rather than have the crew commute from Coleman. A camp consisting of seven 30' x 10' trailers was established near the Oldman River. This served as base of operations for the 11 man crew.

Elevations on the property ranged from 5450 feet at the Oldman River camp-site up to +8300 feet on Isolation Ridge.

RECLAMATION EQUIPMENT

Some of the initial reclamation work conducted by Granby and CanPac Minerals involved the use of a small crawler dragline, a Gradall 880 excavator and tracked bulldozers. The work carried out in 1974 showed that the Gradall 880 performed satisfactorily in restoring exploration trails.

Subsequent restoration work carried out at the company's Fording River Operations showed that the Caterpillar 225 backhoes also performed satis-factorily under this type of field work.

The backhoes could reach between trees, to salvage soils displaced by the road building process. The safety consideration of better gradeability and a lower centre of gravity led to a choice of Caterpillar 225 backhoes for this project.

Two Caterpillar 225 backhoes with 1 cubic yard buckets were used on the project with a D7E bulldozer employed to open access roads and put in cross drains.

Drain Brothers Construction Limited of Blairraore was chosen as the contractors.

TRAIL RESTORATION

Restoration of the exploration trails consisted of using the bulldozer to establish adequate working width on the old trails. Next the backhoes were used to pull back the material dozed downslope by the road building process. The material ranged in composition from thin soils and coal bloom, to straight rock and various combinations thereof.

Machine productivities varied considerably due to material being moved, and width of the working area. In rock, productivity ranged from 600 to 800 feet of resloped road per 9 hour day. In soil-like material, productivity was as high as 1800 feet of resloped road per 9 hour day.

Generally productivity averaged 131 feet of trail per backhoe operating hour.

Switchbacks on road and drill sites could take up to four hours to recon-tour because of the size of the site or nature of the material being moved. Several sites required rehandling of the material to reslope the area to the approximate original contour.

The two backhoes on the job were assigned to portions of the property which allowed them to work independent of each other.

A crew of two men was assigned to each backhoe to carry out fertilizing and seeding of the recontoured areas.

Typically the crew would cache bags of fertilizer and seed above the working area ahead of the backhoe and retrieve the material once the recon-touring was done. This eliminated the arduous chore of packing bags of fertilizer and seed over recontoured ground.

All seed spreading was done the same day as the recontouring. Past experience showed that upon exposure to the sun for a few days, the soils formed a crust which adversely affected seed retention. By seeding immediately after recontouring, this problem was minimized.

Some trails were comprised chiefly of rock talus and no attempts were made to seed those areas.

On roads that were not recontoured, the fertilizer and seed were spread on the cut bank and side slope, as well as the crown of the trail. These trails were cross ditched to minimize erosion caused by surface water running down the roads.

Another technique used on approximately 3/4 of a mile of flat road, was to rip the road surface with the blade of the dozer. By tilting the dozer blade, the operator was able to loosen the packed road surface to a depth of 18 inches. This furrowed, reclaimed surface was then seeded and fertilized.

A steep adit site was resloped by using a combination of the D7 bulldozer and the backhoe. The bulldozer was used to winch the backhoe down the slope and then anchor the backhoe in position while it resloped the lower area. The backhoe was then winched to a new position up the slope, to repeat the process.

FERTILIZING AND SEEDING

The fertilizer formulation employed on the project comprised of a 13-16-10 mix applied at a rate of 200 pounds per acre plus an additional 20 pounds per acre of 46-0-0 (urea). This combination provided 35 pounds N, 32 pounds P_2O_5, and 20 pounds K_2O per acre. These nutrient values will pro-vide both grasses and legumes with a basis for good growth.

The seed mixtures employed on the project were of two types. At the outset of the project, an order was placed for mix No. 1, described below, but at the end of the project, additional seed, mix No. 2, was obtained from the Fording River Operations. Time constraints prevented the Isolation project from obtaining mix No. 1 and the second mix should provide *a* comparison between the two.

The second mix has proven equally effective at the company's operations and is best suited for low altitude, less than 7000 feet elevation.

Component	Mix #1	Mix #2
Roamer Alfalfa	15%	-
Rhizoma Alfalfa	-	35%
Sainfoin	20%	9%
Alsike Clover	10%	17%
Timothy	10%	-
Slender Wheatgrass	8%	-
Streambank Wheatgrass	7%	26%
Creeping Red Fescue	25%	4%
Redtop	5%	9%
Canada Bluegrass	-	
	100%	100%

All legumes were inoculated.

Application rates were 80 pounds per acre. Spreading was accomplished using hand spreaders.

Project timing resulted in Mix #1 being spread at the higher elevations, starting the first week of July. The work continued down to the lower ele vations and Mix #2 was spread chiefly in the last week of August and the first two weeks of September.

PROJECT STATISTICS

1) Backhoes resloped 27.8 miles of trails
approximately 50 drill sites 1
major adit site

2) Roads seeded and fertilized but available for future access 15.7 miles.

3) Supplies used 18 3/4 tons of fertilizer
4.0 tons of seed
6,800 gallons of diesel fuel
2,650 gallons of gasoline

4) Crew Size Reclamation 1 Field Supervisor
5 Labourers

Contractor 1 Foreman
2 Backhoe Operators 1
Bulldozer Operator

Camp Catering 1 Cook
1 Bullcook

Total 12 People

5) Project Completion Time = 78 Days

COSTS

I. Average cost per reclaimed mile of trail = $4,430.00 or $0.84 per linear foot of resloped trail.

II. Breakdown of Project Costs

Item	Costs*
A. Equipment rental; backhoes, dozer, rental vehicles, mobilization & demobilization	47%
B. Supplies seed, fertilizer, fuel, miscellaneous	13%
C. Camp Costs trailer rentals, transportation to and from camp	9%
D. Catering Costs cook & helper, propane, delivery charges	15%
E. Labour & Supervision crew & supervisor	16%
Total Project	100%

* Does not include administrative charges

ADDENDUM

During the summer of 1978, 48,300 feet (9.1 miles) of exploration roads were resloped at the Fording River Operations of Fording Coal Limited using a similar reclamation technique.

ACKNOWLEDGMENTS

I would like to thank the following for their co-operation in the completion of the Isolation Ridge Reclamation Project.

Harold Ganske Land Use Office Alberta Forestry Service
Drain Brothers Construction Limited Blairmore, Alberta
Roger Berdusco Reclamation Administrator Fording Coal Limited

DISCUSSION RELATED TO ANTON MAGNUSSON'S PAPER

Jake McDonald, B.C. Ministry of Energy, Mines and Petroleum Resources With regards to Alberta regulations, what is their criteria compared to British Columbia and our reclaimed roads. We have looked at reclaimed rock piles where you have moved rock from one place to another. Is it the regulations in Alberta that say you have to return the material back to its place of origin, or is there some guideline to help decide that there is no point in reclaming certain areas because no vegetation will grow there. For example, in some areas of B.C. where we have wildlife habitat on the southeast facing grassy slopes in such places as the East Kootenay, it pays to reclaim these roads and return them to their natural state. Is there any criteria in Alberta, or do they just say this is the way it's going to be.

Ans. The discussion we had on the project was with the Alberta Forestry Service. They are the people in Alberta that you actually deal with on reclamation. In British Columbia, of course, it is the Ministry of Energy, Mines and Petroleum Resources. We had some discussions with the Alberta people, but I was dealing with it third-hand because they were carried on in the Calgary office with the Forestry Service. Essentially, the guide-line which I worked under was that Alberta would like all the roads that we disturbed restored to natural ground topography. The extreme examples I showed you with the rocks were actually rather limited in area. We had about five or six miles of what you would call major rock falls, that we resloped. A neighbouring project to the south of us also had extremely rocky conditions and they were doing the same work. All we had to guide us was a general guideline set down by the Alberta Forestry Service, which we followed to recontour.

Jake McDonald, B.C. Ministry of Energy, Mines and Petroleum Resources
If you just move rock from one place to the other, is it worth it.

ANS. I don't wish to discuss the government policy of a neighbouring province.

Jake McDonald, B.C. Ministry of Energy, Mines and Petroleum Resources We do things on a site-specific basis in B.C. We are getting to a point where on one side of the border you can do this and on the other side you can do that. I think people on both sides of the border would like to get together and mutually discuss policy with a view to recognizing site-specific conditions. I think it will come in time, but I am interested in the standpoint of whether we should be doing work which is not very important. It costs money, and it's not for a good purpose.

ANS. I would be inclined to question some of the decisions made, but know we seeded many areas of the property in 1974 and we had really excellent growth. It seemed a shame to take a dozer and backhoe in and recontour them, but that's actually what we did during the 1978 program.

Stan Weston, Wesago. Up in Alaska we had exploration roads on a coal property near Mt. McKinley. This was a very tough area which was crossed by about 300 acres of roads. Comparing what we did in Alaska to what happened in Alberta, we took in our Cats, then straightened the roads and followed right in with the aircraft. Using fixed-wing aircraft, we seeded in five days, two of which were too windy for aerial seeding. It seems to me that under the regulations you work with, you are compelled to disturb a lot more soil than necessary without any real reason except to bring it back to contour.

Jake McDonald, Ministry of Energy, Mines and Petroleum Resources I just would like to point out that I am not criticizing what they do in Alberta. I think that they are doing a fantastic job. I wanted to mention that in British Columbia, we take a slightly different approach because of the site-specific conditions of altitude, mountains and rainfall. I think that the work that they have done in the foothills is remarkable and I would like to congratulate them.

Neil Duncan, Energy Resources Conservation Board. Perhaps I could shed a little light on Jake's (McDonald) question. This is Category 2 Land. By the way, this ridge is also known as Grand Ridge because when Granby came along and decided it would never produce any mine it was called Isolation Ridge. Category 2 means "underground mining only" so there would be no real reason to leave any of these roads for access to open pit mining. There is, if I remember rightly, about 80% of the reserves in Grand Ridge or Isolation Ridge that are for underground mining. So really, returning it to its original contour means it will be there for good, because if mining takes place it will be underground. Another reason for totally reclaiming, of course, is the number of recreational vehicles, 4 x 4's and that sort of thing. Therefore, the Forestry Service would like to see a road completely returned to discourage people from wandering off the road into the adjacent wilderness areas. We do try to completely reclaim the road where we'd like to stop any further access. That might shed a little light on the case.